

App. No. 10/605,519
Amendment dated September 14, 2005
Reply to Office action of June 14, 2005

REMARKS

Summary of Amendments

Claim 1 has been amended to incorporate the limitation of claim 12, and accordingly claim 12 has been canceled, and claim 13 has been amended to depend from claim 1 rather than claim 12. Claim 5 remains withdrawn, but amended as previously presented in Applicants' reply of March 29, 2005.

In addition, new claim 14 has been added. New claim 14 contains the limitations of claims 1 and 2, together with language, underlined in the quote below, limiting the claimed retaining member according to how, and clarifying how, the member functions:

a detachable retaining member . . . for directly mechanically pressing upon said temperature-gauging contact to clamp it in between an endface of said retaining member and the temperature-gauging site in the gauging subject article.

Claim Rejections - 35 U.S.C. § 102

Claims 1-3, 6, 7 and 9; Tymkewicz '123

Claims 1-3, 6, 7 and 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat. No. 4,259,123 to Tymkewicz.

Claim 1 has been amended so that the claim is directed to a ceramic susceptor that includes the temperature gauge (as recited in claim 1 prior to the present amendment), rather than to the temperature gauge itself. That is, the claim 12 limitation has been added to claim 1.

I therefore, claim 1 can no longer be said to be anticipated by the Tymkewicz reference—as, in fact, is noted on page 3 of the Office action, in making the rejection of claims 12 and 13 under 35 U.S.C. § 103: "Tymkewicz does not disclose using the temperature gauge in semiconductor manufacturing equipment having a ceramic susceptor."

Because the limitation of claim 12 has been incorporated into claim 1 by the present amendment, the rejection of claim 12 under 35 U.S.C. § 103 should be addressed here. Claim 12, together with claim 13, is rejected both (i) as being unpatentable over Tymkewicz in view of "Shiyoku" (sic—Patent Abstracts of Japan

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should have transliterated the inventor's name as "Shoku"), and (ii) over Shoku in view of Tymkewicz.

The Office action asserts that a person skilled in the art would be motivated to "modify" an electronic temperature sensor of Tymkewicz by putting it into a ceramic susceptor of Shoku, because Shoku "teaches that it is useful to provide a ceramic susceptor with a thermocouple temperature gauge in order to measure the temperature of a wafer as it is being [processed] by the manufacturing equipment." While this is certainly a reasonable motivation to combine the technology disclosed in the two references—indeed this fundamental requirement of susceptor-controlling technology is discussed at length in the background section of the specification for the present specification—it is respectfully submitted that such a combination would not arrive at the present invention, in particular because such a combination would be inoperable.

The Office action then asserts that a person skilled in the art would be motivated to modify a ceramic susceptor of Shoku by replacing the Shoku thermocouple with an electronic temperature sensor of Tymkewicz, because Tymkewicz "discloses that the thermocouple temperature gauge is beneficial over other contact thermocouples since the mounting of the temperature gauge allows the sensing contact to be biased against the surface being measured, to provide improved response to temperature changes." Again, although this stated motivation to combine the two technologies may be reasonable in and of itself, the resulting device would not be, it is respectfully submitted, in that the device would not be functional.

In several places in the '123 patent, Tymkewicz states that his contact member 4, which the Office action reads as meeting Applicants' claim 1 limitations as to a thermocouple and temperature-gauging contact exposed in the thermocouple tip end, is *plastic*: "it is a plastic member of low mass and of relatively short extent" (column 1, lines 38-40); "plug-like member 4, which may be of molded thermosetting material, or potting material to encapsulate the [thermocouple] strands if desired, or other similar plastic type material" (column 2, lines 32-35); "the material from which the contact members 4 and 33 are formed is of plastic composition" (column 4, lines 35-37); and

in the event it is desired to use a different construction of [the] probe member, as long as the mass of the member 4 or 33 . . . is maintained as small as possible . . . the concept hereof will be accomplished . . . in contrast to known probe or contact members, which have usually been of metal, [and] have been constructed in ways in which the mass has been minimized but not of plastic

(column 4, lines 46-50).

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As is well known in the art, chemical vapor deposition involves processing temperatures that typically reach 600 to 1000°C, and even with plasma-assisted CVD processes, the temperatures typically range from 250 to 450°C. As is noted in the background, semiconductor manufacturing equipment according to the present invention and in which the present invention is employed includes CVD devices and plasma CVD devices.

It is believed that the typical CVD process temperatures that a ceramic susceptor as now recited in claim 1 reaches would melt the Tymkewicz contact member (temperature probe), rendering it inoperable. Indeed, under the Embodiments section of the present specification, paragraph [0054] sets forth details of a test run on a ceramic susceptor Sample 1, in which "the ceramic susceptor was heated to a temperature of 500°C." It is further submitted that even if certain plastics that arguably would meet Tymkewicz's stipulations as to suitable materials for his temperature probe could withstand temperatures upwards of 250°C, a probe composed of such a plastic could not remain functional under the routine process temperatures under which a ceramic susceptor as recited in claim 1 operates.

Moreover, it is respectfully asserted that nowhere in the Office action has a *prima facie* case been made for the operability of a ceramic susceptor combining the technologies of Shoku and Tymkewicz.

It is respectfully submitted that for the foregoing reasons claim 1 in its current form should be held allowable, and thus the remaining claims rejected under this section of the Office action—claims 2, 3, 6, 7 and 9—should be held allowable as depending from an allowable base claim.

Furthermore, under this section the Office action states that Tymkewicz discloses a temperature gauge comprising "detachable retaining means for mechanically pressing upon the contact to retain it against the site." New claim 14, in contrast distinguishes the claimed temperature gauge as being

for directly mechanically pressing upon said temperature-gauging contact to clamp it in between an endface of said retaining member and the temperature-gauging site in the gauging subject article.

It is respectfully submitted that the Tymkewicz temperature probe does not meet the above-quoted limitations from claim 14, because the endface of the retaining member (bushing 11) in Tymkewicz does not mechanically press upon the temperature-gauging contact, to clamp it against the temperature-gauging site in the gauging subject article.

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Rejections under 35 U.S.C. § 103

Claims 12 and 13; Tymkewicz '123 in view of Shoku '291, and Shoku '291 in view of Tymkewicz '123

Claims 12 and 13 were rejected twice under this section, once as being unpatentable over the Tymkewicz patent in view of Japanese Unexamined Pat. App. Pub. No. 2002-164291 to Shoku, and once again as being unpatentable over Shoku in view of Tymkewicz.

It is believed that these rejections have been sufficiently addressed above, in Applicants' arguments as to how amended claim 1 distinguishes over the combination of the technologies disclosed in Shoku and Tymkewicz. In essence, the device that Tymkewicz discloses and teaches is a lightweight plastic temperature probe on the end of a flexible sheath, thus designed to snake into a thin curvy hole and be pressured on by the helical spring 7, which can be twisted into the bushing 11 to hold the probe member 4 in place. (Cf. column 3, lines 32-38 in particular.)

Moreover, in rejecting claims 12 and 13 over Shoku in view of Tymkewicz, the Office action states, as noted above, that the mounting of the Tymkewicz temperature gauge "allows the sensing contact to be biased against the surface being measured, to provide improved response to temperature changes." Yet with regard to claim 14, as in turn noted above, the Tymkewicz temperature probe does not meet the claim 14 limitations that the endface of the retaining member mechanically presses upon the temperature-gauging contact, to clamp it against the temperature-gauging site in the gauging subject article.

- Claim 4; Tymkewicz '123 in view of Huebscher '305
- Claim 11; Tymkewicz '123 in view of Ward '091

Claim 4 was rejected over the Tymkewicz patent in view of U.S. Patent No. 3,751,305 to Huebscher, while claim 11 was rejected over the Tymkewicz patent in view of U.S. Patent 4,904,091 to Ward.

For the reasons set forth above in arguing against the § 102 rejections, it is respectfully submitted that claim 1 should be held allowable, and that in turn so should claims 4 and 11 be, inasmuch as these claims depend from an allowable base claim, rendering moot the rejections under these sections.

Allowable Subject Matter

Applicant gratefully acknowledges that claim 8 remains indicated as being directed to allowable subject matter, and that in addition now claim 10 does as well.


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Nevertheless, based on the present amendments and accompanying arguments it is believed that not only claims 8 and 10, but all the pending claims should be held allowable.

Accordingly, Applicant courteously urges that this application is in condition for allowance. Reconsideration and withdrawal of the rejections is requested. Favorable action by the Examiner at an early date is solicited.

Respectfully submitted,

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James W. Judge
Registration No. 42,701

JUDGE PATENT FIRM
Rivière Shukugawa 3rd Fl.
3-1 Wakamatsu-cho
Nishinomiya-shi, Hyogo 662-0035
JAPAN

Telephone: 305-938-7119
Voicemail/Fax: 703-997-4565